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# SCIENCE

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## RECENT EVIDENCE FOR THE EXISTENCE OF THE NUCLEUS ATOM<sup>1</sup>

THE great French scientist Poincaré, just before his death two years ago, described an atom before the French Physical Society in these words:

Each atom is like a kind of solar system where the small negative electrons play the rôle of planets revolving around the great positive central electron which takes the place of our sun. . . . Besides these captive electrons there are others which are free and subject to the ordinary kinetic laws of gases. The second class are like the comets which circulate from one stellar system to another, establishing thus an exchange of energy between distant systems.

Such an atom is a world in itself and strangely different from the kind we learned about in our text-books twenty years ago. One of the much used chemistries of that day put it in this way:

An atom is the smallest portion of matter that can exist; it is incompressible, indivisible and in itself unchangeable.

How has this great change of view come about? How has the indivisible unit evolved into the complex microcosm we now imagine? Time would fail us to trace all the steps of the way; we will attempt only to bring out some of the considerations which have in the past three years led many of our foremost thinkers to believe in that particular type of atom which we may call the nucleus atom. This type is similar to that which Poincaré pictured except that the central body is much smaller—very

<sup>1</sup> Address of the vice-president and chairman of Section B, Physics, of the American Association for the Advancement of Science, at Philadelphia, December 29, 1914.